A STUDY TO ASSESS THE EFFECTIVENESS OF GARLIC ADMINISTRATION ON BLOOD PRESSURE AMONG HYPERTENSIVE PATIENTS IN KADUTHURUTHY CO-OPERATIVE HOSPITAL, KOTTAYAM, KERALA.

BY

30083601

A DISSERTATION SUBMITTED TO THE TAMILNADU Dr.M.G.R. MEDICAL UNIVERSITY, CHENNAI, IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF THE DEGREE OF MASTER OF SCIENCE IN NURSING

MARCH – 2010

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SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF THE DEGREE OF MASTER OF SCIENCE IN NURSING FROM THE TAMILNADU DR. M.G.R. MEDICAL UNIVERSITY, CHENNAI.

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CERTIFIED THAT THIS IS THE BONAFIDE WORK OF

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CHAPTER – I

INTRODUCTION

"Be anxious for nothing, but in everything by prayer and supplication with thanks giving let your requests be made known to God".

- Philipians 4 : 6

BACKGROUND OF THE STUDY

Hypertension, a chronic illness is a growing condition in our society, due to life style changes. Once it is diagnosed, its control basically depends on adapting a healthy lifestyle and therapeutic compliance. Hypertension is the silent killer disease of today and the single most important predictor of cardiovascular risk. The higher the blood pressure the greater the risk. Hypertension is defined as a consistent elevation of systolic blood pressure > 140 mm of Hg and consistent elevation of diastolic blood pressure >90 mm of Hg Hypertension mainly of 2 types primary (essential) and secondary hypertension.

Blood pressure was first recorded in 1773 by Rev Stephen Hales and since then various people have tried to study further on the techniques of recording blood pressure and the cause of variation in blood pressure. Hypertension is a medical condition in which constricted arterial blood vessel increases the resistance to blood flows, causing the blood to exert excessive pressure against vessel walls. The heart must work harder to pump blood through the narrowed arteries. If the condition persists, it is damage for the heart and blood vessels, increasing the risk for stroke, heart attack and kidney failure. Often it causes no symptom until it reaches a life threatening stage. If we strive for better hearts for our people, the holistic management of hypertension need to be preached as well as practiced (wasier 2003)

Dietary modification remains key to the treatment of patients with hypertension and prevention of complication due to hypertension. Through life style modification and dietary management the blood pressure can be controlled. It helps to prevent the incidents of hypertension in the world.

The incidence and prevalence of hypertension can be significantly, reduced by low salt intake, vegetarian dish, stress management, cessation of smoking, reduction of alcohol intake. This is also helpful in reducing the doses of antihypertensive drugs and its slide effects. The vegetarian dish and high intake of potassium in diet leads to lower incidents of hypertension. So dietary management play on important role in reduction/lowering blood pressure.

NEED FOR STUDY

Hypertension or high blood pressure is one common ailment in adults. It is estimated that more than 10 million people may have high blood pressure but are unaware of their illness. As per research conducted in India, about 25 per cent adults in cities and 10 per cent in rural areas suffer from hypertension. The overall incidence of hypertension in India is estimated to be 66 million.

According to a survey conducted by association of physicians of India, urban areas in the country had a significantly higher incidence of hypertension 27-37% as compared to rural area 2-8% (Agarwal-2001).In India about 20% of the adult population suffers from hypertension, making if the country's biggest silent killer. From this almost, 90% of the cases fall into the category of primary as essential hypertension.

The Tamilnadu Government public Health and preventive medicine were conducted 385 camps in rural areas of Tamil Nadu between 2002-2003 and 7.98 lakhs people were screened of this 5.02% was affected with hypertension (public Health and preventive medicine 2003).

Shanthirani et.al., (2003) conducted a study in Chennai urban population to know the prevalence of hypertension.1262 samples were participated in this study. The result shows that prevalence of hypertension in this populations 21.1 percent. The prevalence of hypertension appears to be appears to be high in this urban south Indian population and this calls for urgent steps for its prevention and control.

Apart from blood pressure medication, alternative treatment ,diet and lifestyle changes are essential in treating essential hypertension.

Conlin (2001) conducted clinical trials and epidemiological studies on 1000 patients by random sampling which confirmed the blood pressure lowering effects of sodium restriction ,the consumption of diets that are low in fat and enriched in fruits and vegetables and the sustained effects of weight reduction .This reaffirms the role of lifestyle modification as both preventive and adjunctive means to lower blood pressure.

Kavitha.K .,(2009).,conducted a study to assess the effectiveness of Guided imagery on blood pressure among 30 PIH mothers patients in government hospital, Maduari. Intervention on guided imagery was administered using the Audio CD, and made them to hear the Guided imagery two times a day for 20 minutes for 5 days. Result of this study was concluded that the significant difference between the mean systolic blood pressure before 158.3(S.D=11.4) after 136.7(S.D=5.6),t=15.9(P=0.01) and the mean diastolic blood pressure before 102(S.D=6.1),after 88.3(SD=4.7) and t=13.7(P=0.01).

Job.S., (2009).,conducted a study a study to assess the effectiveness of abdominal breathing exercise on blood pressure among 40 hypertensive patient in Mahajubille Hospital, Edathua. Intervention on abdominal breathing exercise was taught to the experimental group by playing video CD, Abdominal breathing exercise was performed for 21 days. Result of the study was shown that there was a significant difference between the mean systolic blood

pressure before 145.5(SD=18.20) after 136.6(S D=19.03) and t=6.52(p=0.01) and significant difference between the mean diastolic blood pressure before 84.7(S D=8.81), after 76.8 (SD=7.96) t= 5.89(p=0.01).

Thangaamani .,(2007).,conducted a study to assess the effectiveness of the Benson's Relaxation therapy among 30 PIH mothers at Vijaya Hospital ,Salem. Intervention on Benson's Relaxation was performed three times a day for 20 minutes for one week. Results of the study shown that there was a significant difference between the mean systolic blood pressure before 143.23(S D=4.36), after 134.6(S D=3.30) and t=13.32($p<0.05$) and significant difference between the mean diastolic blood pressure before 93.40(SD =4.55), after 88.18 (SD=3.40) and t=7.1($P<0.05$).

Robert Pastore (American Heart Association,2002) recommended that diet can be a powerful strategy to combat hypertension. Exercise, diet supplement and certain herbs can produce a hypertensive effect, consuming a diet which is rich in fiber, potassium, calcium and magnesium and vegetables, fruits, legumes whole grains, low fat dietary products reduces the blood pressure.

Garlic (Allium sativm) is nature's best known herbs and it contain allicin, a compound able to inhibit the action of the blood pressure arising hormone angiotensin II. Researcher at the university of Adelaide, Australia have reported that daily uses of fresh garlic reduces systolic blood pressure by an average of 4.6 mmHg .

Health uses of garlic

- Reduce cholesterol and lower chances of heart diseases
- Antioxidant; Garlic is rich in antioxidant that can help fend off cancer ,heart disease and the effects of aging
- Anti-Bacterial ;It may be used to treat infections like thrush

- Reduced blood pressure; Garlic can helps to reduce blood pressure.
- Garlic is also help regulate blood sugar levels and therefore may be helpful

Aged garlic extract has been shown to reduce multiple cardiovascular risk factors, including blood pressure, cholesterol, and platelet aggregation and adhesion, while stimulating the generation of nitric oxide in endothelial cells. A recent, double-blind, placebo-controlled study evaluated aged garlic extract's ability to inhibit vascular calcification, a marker of plaque formation in human coronary arteries, in 23 patients with atherosclerosis. The results suggested that aged garlic extract may inhibit the progression of coronary calcification, suggesting a therapeutic role for garlic in patients at high risk for future cardiovascular events.

Diet is the backbone of any treatment plan for hypertension without effective dietary intervention; good metabolic control usually cannot be achieved. Dietary changes are of paramount importance. The prevention and correction of obesity is a prudent away of reducing the risk of hypertension other measures to control hypertension includes reduction of stress increasing relaxation techniques medication exercise promotion, cessation of smoking and alcoholism.

Dietary modification remain key to the treatment of patients with hypertension and prevention of complications due to hypertension. Through life style modifications and dietary management the blood pressure can be controlled. It helps to prevent the incidents of hypertension in the world (Association of Physicians in India 2001).

Nurses provide a major portion of health care and they have opportunies for finding, assessing, the health needs of these patients. They also render follow – up services to them in order to maintain an effective control of hypertension .It is necessary to assess the life –style of people and identify the risk factors in hypertension before rendering the promotive health services, nurse can help in various setting in identification and modification of risk factors of hypertension .

STATEMENT OF THE PROBLEM

A study to assess the effectiveness of garlic administration on blood pressure among hypertensive patients in Kaduthuruthy Co-operative Hospital, Kottayam.

OBJECTIVES

1. To compare blood pressure before and after garlic administration among hypertensive patients in experimental group.
2. To compare the mean difference in blood pressure among hypertensive patients in experimental group and control group.
3. To test the association between the mean difference in blood pressure in relation to selected factors among hypertensive patients in experimental group.

HYPOTHESES

H_1: There will be a significant difference in systolic blood pressure before and after garlic administration among hypertensive patients in experimental group.

H_2: There will be a significant difference in diastolic blood pressure before and after garlic administration among hypertensive patients in experimental group.

H_3: There will be a significant difference in the mean difference in systolic blood pressure among hypertensive patient in experimental and control group.

H_4: There will be a significant difference in the mean difference in diastolic blood pressure among hypertensive patients in experimental group and control group.

H_5: There will be a significant association between mean difference in systolic blood pressure and the selected factors among hypertensive patients in experimental group.

H_6: There will be a significant association between mean difference in diastolic blood pressure and the selected factors among hypertensive patients in experimental group.

OPERATIONAL DEFINITIONS

Hypertension : Refers to medical disorder characterized by persistent elevation of the systolic blood above or equal to 140mm of Hg and diastolic blood pressure above or equal to 90mm of Hg.

Hypertensive Patient : In this study, it refers to the patients whose systolic blood pressure is above or equal to 140mm of Hg and diastolic blood pressure above and equal to 90mm of Hg. They were diagnosed by the physician as hypertensive patients attending the OPD in selected hospital in Kottayam.

Garlic (Allium Sativum) : A vegetables of the onion family with a very strong taste and smell, used in cooking to give flavour to food. Ten grams of garlic was cooked, served following the steps in procedure for garlic administration (Appendix - VII)

Selected Factors: Refers to those factors which were thought to influence the effect of garlic on blood pressure such as age, sex, and occupation, nature of physical activities, antihypertensive drugs and sleep.

ASSUMPTION

1. Hypertensive patient will be willing to participate in study.
2. The participants would practice consumption of garlic at least 3 weeks without fail.

DELIMITATIONS

1. The study was delimited to sample attending OPD at Kaduthuruthy, Co-operative Hospital, Kottayam.
2. Post-test measurement after 3 weeks of garlic administration.
3. Blood pressure was measured by the sphygmomanometer.

CONCEPTUAL FRAME WORK

Conceptual frame work is an organized phenomenon which deals with concepts that are assembled by virtue of their relevance to a common theme. Conceptual frame work can severe to guide research which will further support theory development. The conceptual models attempt to represent reality with its minimal use of words.

Here the conceptual frame work was based on CIPP model, which included content evaluation input evaluation, process evaluation and product evaluation.

Context Evaluation

It highlights the environment, surrounding from where the individual engages and interact. In this study it included selected factors such as age, sex, occupation, nature of physical activity, pharmacological management and sleeping hours of hypertensive patients. The setting of the study was Kaduthuruthy, Co-operative Hospital Kottayam where the patients were attending the OPD.

Input Evaluation

It specifies the resources used in the process such as men, money and material. In this study, input evaluation includes measuring pre-test blood pressure (both systolic and diastolic) with sphygmomanometer and preparation for of garlic administration.

Process

If refers to the evaluation of implementing process including the interaction between the client and care givers. In process regular administration of garlic before taking breakfast for 21 days. Garlic (Allium Sativum) : A vegetables of the onion family with a very strong taste and smell, used in cooking to give flavour to food. Ten grams of garlic was cooked, served following the steps in procedure for garlic administration (Appendix - VII).

Product

This information refers to the output as a result of the intervention. It includes measuring post test blood pressure after intervention (both systolic and diastolic blood pressure).

Feed back

Refers to the information sent backward from the product evaluation to the input and the process in order t gain understanding and modify or accept the strategies.

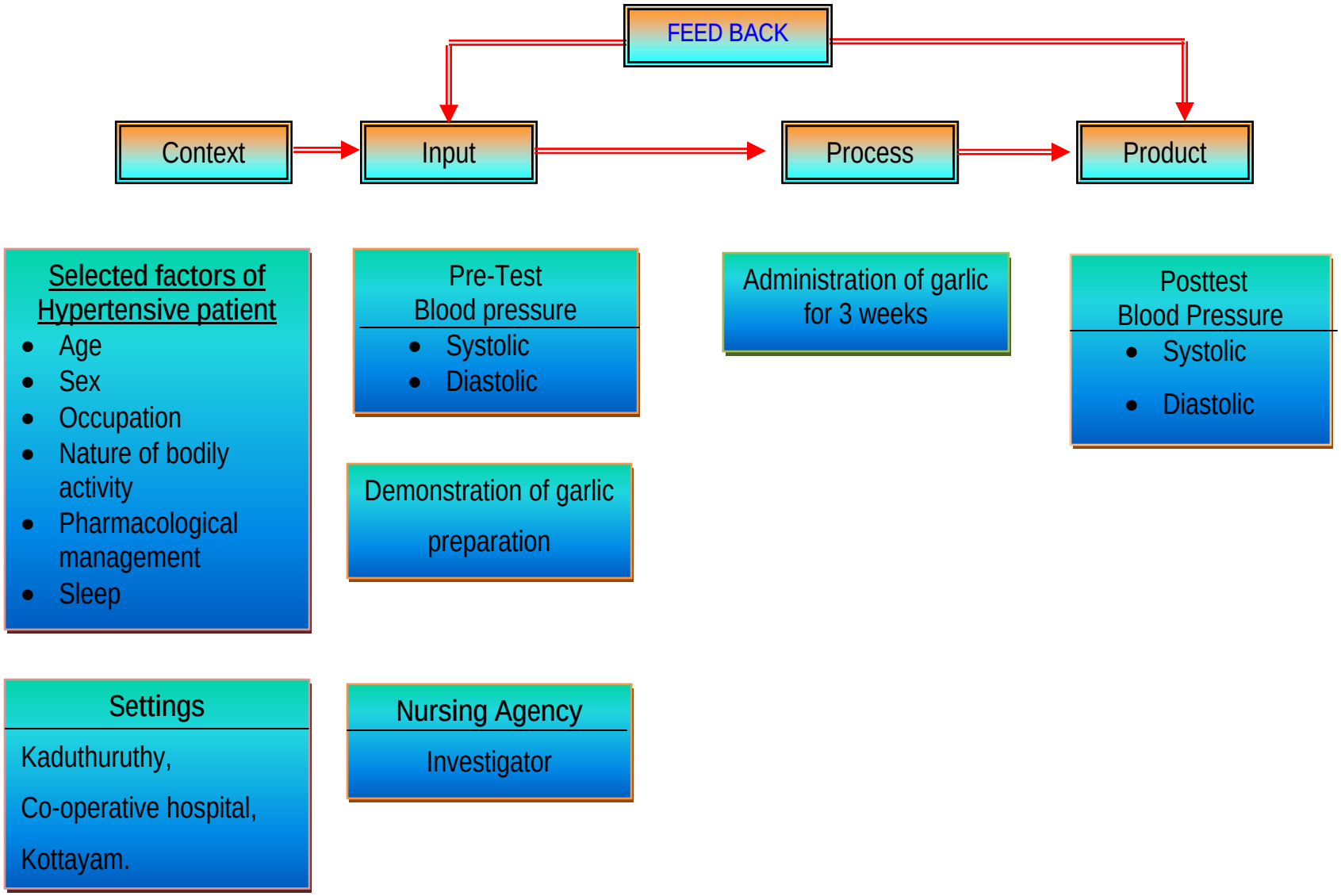

Fig. 1: CONCEPTUAL FRAMEWORK (CIPP MODEL)

CHAPTER – II

REVIEW OF LITERATURE

Review of literature is an essential component for a worthwhile study in any field of knowledge. It helps the investigator to gain information on what has been done previously and to gain deeper insight into the research problem. It also helps to plan and conduct the study in a systematic way.

Review of literature in this study is arranged under the following headings,

I. Studies related to hypertension and management
II. Studies related to effect of garlic and health
III. Studies related to effect of garlic on hypertension

I. STUDIES RELATED TO HYPERTENSION AND MANAGEMENT

Kavitha.K., (2009) conducted a study to assess the effectiveness of Guided imagery on blood pressure among PIH mothers 30 patients were selected by using purposive sampling technique at government hospital, Maduari. Data collected through structured interview / observation schedule and intervention on guided imagery was administered using the Audio CD, and made them to hear the Guided imagery two times a day for 20 minutes for 5 days. Result of this study was concluded that the significant difference between the mean systolic blood pressure before 158.3 (S.D=11.4) after 136.7(S.D=5.6),t=15.9(P=0.01) and the mean diastolic blood pressure before 102 (S.D=6.1), after 88.3 (SD=4.7) and t = 13.7 (P=0.01).

Job.S., (2009) conducted a study a study to assess the effectiveness of abdominal breathing exercise on blood pressure among hypertensive patient. 40 hypertensive patients were selected by simple random sampling technique and assigned as experimental(no=20)and control (n=20) group. The study was conducted at Mahajubille Hospital, Edathua. Data collected through structured interview/observation schedule and intervention on abdominal breathing exercise was taught to the experimental group by playing video CD ,Abdominal breathing exercise was performed for 21 days. Result of the study was shown that there was a significant difference between the mean systolic blood pressure before 145.5(SD=18.20) after 136.6(S D=19.03) and t=6.52(p=0.01) and significant difference between the mean diastolic blood pressure before 84.7(S D=8.81),after 76.8(S D=7.96) t= 5.89(p=0.01).

Modesti P.A., et.al., (2008) conducted a study on slow abdominal breathing combined with music listening among hypertensive patients of sample size 48. Experimental group include patients taking anti-hypertensive drugs and 20 patients served as control group. Experimental group listed to music(raga)for 30 mts while conducting abdominal breathing and control group did not undergo both.The blood pressure among those who listened to music while conducting abdominal breathing dropped by 3 mmof Hg at one week and 4 mm of Hg at one month compared with control .

Thangamani (2007) conducted a study to assess the effectiveness of the Benson's Relaxation therapy among PIH mothers. 30 patients were selected by purposive sampling technique, at Vijaya Hospital, Salem. Data collected through structured interview/observation schedule and intervention on Benson's Relaxation was performed three times a day for 20 minutes for one week. Results of the study shown that there was a significant difference between the mean systolic blood pressure before 143.23(S D=4.36), after 134.6(S D=3.30) and t=13.32($p<0.05$) and significant difference between the mean diastolic blood pressure before 93.40(SD =4.55),after 88.18(SD=3.40) and t=7.1($p<0.05$).

Mi Kyung, et.al., (2003) studied on the long term effect of vitamin C supplementation on blood pressure. A total of 439 japanese subjects initially participated in the trial using vitamin C and beta – carotene to prevent gastric ulcer. Before and on early termination of beta carotene supplementation, 134 subjects dropped out of this trial, where as 120 and 124 subjects tooks the vitamin C supplement daily at either 50 mg or 500 mg respectively, for five years. After five years, systolic blood pressure increased in groups, regardless of vitamin C dose, compared with base line. There was no change in the diastolic blood pressure.

Gregory, et.al, (2002) have brought out the mechanisms which stress may contribute to the racial difference in the prevalence of essential hypertension and associated target organ damage remain unclear. The study examined differences in stress induced pressure natriuresis in 69 blacks and 52 white normotensive age 14 to 27 years, all with a positive family history of hypertension. Urine samples of sodium excretion were collected before and after a series of tasks (video games challenge, forehead cold stimulation). The average blood pressure across the task and the average increase in blood pressure to the 2 tasks were calculated. Blacks had higher mean systolic (131 ± 12 versus 126 ± 12 mmHg, $P < 0.02$) and diastolic (77 ± 8 versus 72 ± 9 mmHg, $P < 0.001$) blood pressure and a greater average change in systolic pressure (15 ± 9 versus 11 ± 7 mmHg, $P < 0.001$). This was associated with a smaller change in sodium excretion (2 ± 6 versus 7 ± 10 mEq/h, $P < 0.002$). The change in sodium excretion was related to the change systolic ($r = 0.31$, $P < 0.03$) and diastolic ($r = 0.27$, $P < 0.05$) blood pressure in whites but not in blacks. Relative wall thickness was greater in blacks (0.03 ± 0.04 versus 0.29 ± 0.03, $P < 0.002$).

Miller, et.al., (2002) study conducted on the effect of anti-oxidant vitamin supplementation on traditional cardio-vascular risk factor states that dietary antioxidants, beta-carotene, vitamin C, and vitamin E might play a potential role in reducing the risk of cardiovascular disease through lowering the blood pressure. Finding from this study suggested

that vitamin C, fruit and vegetables have a blood pressure lowering effect, especially in the Asian population.

Akila, et.al., (2002) carried out a study to confirm the relationship between blood pressure and salt excretion. The study involved 375 adults whose blood pressure ranged between normal and mildly elevated without blood pressure medication. The patients were randomly assigned to consume DASH (Dietary Approaches to stop hypertension) diet or a control diet for three consecutive 30 days periods. During each 30 day evaluation, patients in both dietary groups had a different level of self intake. The patient's blood pressure was measured on five of the last nine days of each 30 day feeding period. In addition a 24 hours urine sample was obtained during the last week of each study period to determine salt excretion. Data analysis showed that patients assigned to the DASH diet excreted salt more easily and in greater amounts as well as reduced their blood pressure. Results also showed that the impact of DASH diet lowers blood pressure more effectively in people with high sodium sensitivity, through its diuretic action.

Steffen, et.al., (2001) conducted a study on effect of exercise and weight loss on high blood pressure. Over 100 people with high BP who were not taking medication for it, agreed to have their blood pressure measured through out of the course of the 6 months study. Participants were divided into 3 groups. One group that used a combined exercise and weight management programme, another group that used only exercise, and a last group that did not exercise or use the weight management programme. It concluded that exercise specially when combined with weight loss, reduces blood pressure levels at rest and in situations that typically elevate BP, such as intense physical activity and emotional distress.

Anastasia et.al., (2000) did a study to determined the effect of exercise and weight loss on cardiovascular responses during mental stress in mildly moderately. Overweight patient with elevated blood pressure 99 men and women with high normal or

non-medicated stage 1 to stage 2 hypertension underwent a battery of mental stress tests, subjects were randomly assigned to 1 of 3 treatment. a) Aerobic exercise, b) Weight management combining aerobic exercise with behavioral weight loss program, c) Watching list control group. After 6 months compound with control/subjects .These results demonstrates the exercise particularly when combined with a weight loss program, can lower both resting and stress induced blood pressure level and procedure a favorable hemodynamic pattern resembling that targeted for antihypertensive therapy.

II. STUDIES RELATED TO EFFECT OF GARLIC AND HEALTH

Kianifer HR., et.al, (2006) conducted a study to assess the effect of oral garlic on arterial oxygen pressure in children with hepatopulmonary syndrome. Garlic powder in a capsule form was given to 15 children (10 boys and 5girls with a mean age of 9.4 +/-3.9 years) with hepatopulmonary syndrome at the dosage of 1g/1.73m (2) per day. Patients were evaluated clinically and by arterial blood gas every four weeks. The underlying problems were biliary tract artesia (4 patients), auto immune hepatitis (4 patients). Cryptogenic cirrhosis (4 patients) and pre sinusoidal portal hypertension (3 patients). Eight patients (53.3%) showed an increase of 10mm Hg in their mean arterial oxygen pressure. The baseline PaO(2) was 65.6+/-12.1 mm Hg in the responder group and 47.1+/11.2mm Hg in non-responder group. At the end of treatment the mean PaO(2) in responders 47.5+/-11.87 mm Hg, respectively ($P<0.01$).It was concluded that garlic increase oxygenation and improve dyspnea in children with hepatopulmonary syndrome.

Tessma B. et.al., (2006) conducted an experimental study to assess the antibacterial effect of garlic (Allium-Sativum) on bacterial isolates from wound infections, the study was conducted in Gondar Universities Teaching Hospital School of Medical Laboratory Technology, the minimum inhibitory concentration (MIC) and minimum bacterial concentration (MBC) of garlic to control strains of staphylococcus aureus ATTC 25923 and Escherichia coli ATTCC

25922, as well as to clinical isolates of S. aureus, E. Coli, Proteus mirabilis, Klebsiella pneumonia and Pseudomonas aeruginosa were determined using agar dilution method the data was collected in triplicate .All the tested organisms were inhibited by the crude preparation of garlic extract at 33.75mg/ml expect for the control organisms. The results shown that crude preparation of garlic could be used an effective antibacterial agent for the tested organisms.

Sabitha P. et.al., (2005) was conducted a study to assess the efficacy of garlic paste in oral candidiasis. In this study a randomized trial of 56 patients topical application of garlic paste for 14 days was found to be as effect as that of clotrimazole solution in suppressing clinical signs of oral candidasis the results of this preliminary study explore the possible role of garlic in the treatment of oral candidiasis.

Dhawan.V., Jain.S., (2005) was conducted a comparative study to assess effect of garlic supplementation prevents oxidative DNA damage in essential hypertension. Twenty (20) patients of essential hypertension as diagnosed by INC, VI, criteria (Group 1) and 20 age and Sex-matched normotensive controls (Group II) were enrolled in this study. Both groups were given garlic pearls (EP) in a dosage of 250mg per day for 2 months. Baseline samples were taken at the start of the study. i.e o day, and there after 2 months follow-up, 8-Hydroxy-2', deoxy guanosine, lipids, lipid periodation, no and antioxidant vitamins A, E and C were determined-A moderate define in blood pressure (BP) and a significant reduction in 8-OHdG, No levels and lipid peroxidation were observed in Group - I. Subjects with garlic pearls supplementation but significant increase in vitamin levels and total antioxidant status was observed in this group as compared to the control subjects. It was conclude that garlic has beneficial effects in reducing blood pressure and counteracting oxidative stress, and thereby offering cardio protection in essential hypertension.

Bedi MK., (2001) conducted a study regarding the effectives of garlic in increasing milk secretion .34 primi postnatal mothers were selected randomly and assigned as control and experimental groups. The pretest score were collected on d5. The experimental group mothers were treated with 6 - 8 cloves of raw garlic 2 hour before breast feeding from (d6-d11) and the post test done on d11. The control group mothers were given the routine care. The results were observed by the amount of feeding, letdown sensation and the fullness of breast .statistical test 't' test is used to analyze the data. There was a significant increase in milk secretion in the experimental group (<.05)

III. STUDY TO ASSESS EFFECT OF GARLIC ON HYPERTENSION

Sobenin A et al., (2009) conducted a study to assess the effect of time-release garlic-powder tablets lower systolic and diastolic blood pressure in men with mild and moderate arterial hypertension. In this double-blind, placebo-controlled trial with an active control arm, the hypotensive action of time - released garlic powder tablets (Allicor) was compared with that of regular garlic pills (kwai) in 84 men with mild or moderate at arterial hypertension. After an 8-week placebo treatment run - in phase patients were randomized either to 600mg Allicor (n=30) or to placebo (n=20) daily for 8 weeks. In addition, in the open-label branch, patients received either 2400mg Allicor daily (n=18) or 900mg Kwai daily (n=16). Allicor treatment (600mg daily) resulted in a reduction of both systolic and diastolic pressure by 7.0mm Hg and 3.8 mm Hg respectively. Treatment with Kwai resulted in same decreased in systolic blood pressure (5.4mm Hg) as that seen with Allicor, but no decrease in diastolic blood pressure was observed with Kwai. The results of this study shows that time-released garlic powder tablets are more effective for the treatment of mild and moderate arterial hypertension than are regular garlic supplements.

Ried K., et.al., (2007) conducted a study to assess the effects of garlic on blood pressure. Randomized controlled trials with true placebo groups, using garlic – only preparation, and reporting mean systolic and / or diastolic blood pressure and standard deviation were included in mete analysis. Meta regression analysis was performed to test the associations between blood pressure outcomes and duration of treatment, dosage, and the blood pressure at start of treatment. Meta analysis of all studies showed a mean decreased of 4.6 ± 2.8mm Hg for SBP in the garlic group compared to placebo (n=10, P=0.001) while the mean decreased in the hypertensive subgroup was 8.4 ± 2.8mm Hg for SPB (n=4 P<0.001), and 7.3 ± 1.5 mm Hg for DBP (n=3 P<0.001). Regression analysis revealed a significant association between blood pressure at the start of the intervention and the level of blood pressure reduction SBP, R=0.057,(P=0.03), DPB R=0.315, (P=0.02).

Sifagy.C.A., Neil.H.A., (2000) conducted study to assess the effect of garlic on blood pressure, in this study eight trials were identified call using the same dried garlic powder preparation (Kwai) with data from 415 subjects included in the analysis. Only three of the trials were specifically conducted in hypertensive subjects of the seven trials that compared the effect of garlic with that of placebo, three showed a significant reduction in systolic blood (SBP) and four in diastolic blood pressure (DPB), the result of this study was 5.5 percent decrease in systolic blood pressure and a smaller decrease in diastolic pressure.

Qidwai. W., et.al.,(2000) conducted a study regarding the effectiveness of dietary garlic (allium sativum) on blood pressure. A questionnaire was developed in order to estimate the dietary intake of garlic per person per month and to record three blood pressure readings on each individual. It was administered to 101 adult subjects, presenting to the Family Practice Centre of a hospital in the city of Karachi, Pakistan. The data was entered into the epi - info program and the analysis was done using the SPSS software. Subjects with blood pressure on the lower side are found to consume more garlic in their diets. The mean difference is

significant for systolic with p value of 0.05. This study shows that individuals whose blood pressures are on the lower side are more likely to consume more garlic in their diets.

The literature review helped the investigator to become aware of the various methodologies used in studies pertaining to effect of garlic on blood pressure among hypertensive patients. It helped to establish the need for the study, state the problem clearly, develop conceptual frame work, develop the tool and plan for analysis of data in order to achieve the objectives of the study.

CHAPTER – III

METHODOLOGY

Methodology is a systematic way to solve the research problems. The research methodology involves the systematic procedure by which the investigation starts from the initial identification of the problem to its final conclusion.

This chapter includes research design, variable, setting, population, sample and sample size, sampling technique, developing of the tool, content validity, pilot study, data collection procedure, plan for data analysis and ethical consideration.

RESEARCH DESIGN

Researcher's over all plans for obtaining answers to the research questions or for testing the research hypothesis is referred to as the research design. The research design selected for the present study was a quasi experimental design to be specific repeated measures time series design to evaluate the effect of garlic blood pressure among hypertensive patients.

The study intended to evaluate the effect of garlic on blood pressure among hypertensive patients who were attending OPD in a selected hospital. The experimental group who received intervention through garlic administration for continuous 21 days along with their regular treatment. The control group included hypertensive patients is the same setting who did not receive the intervention, but received their regular treatment.

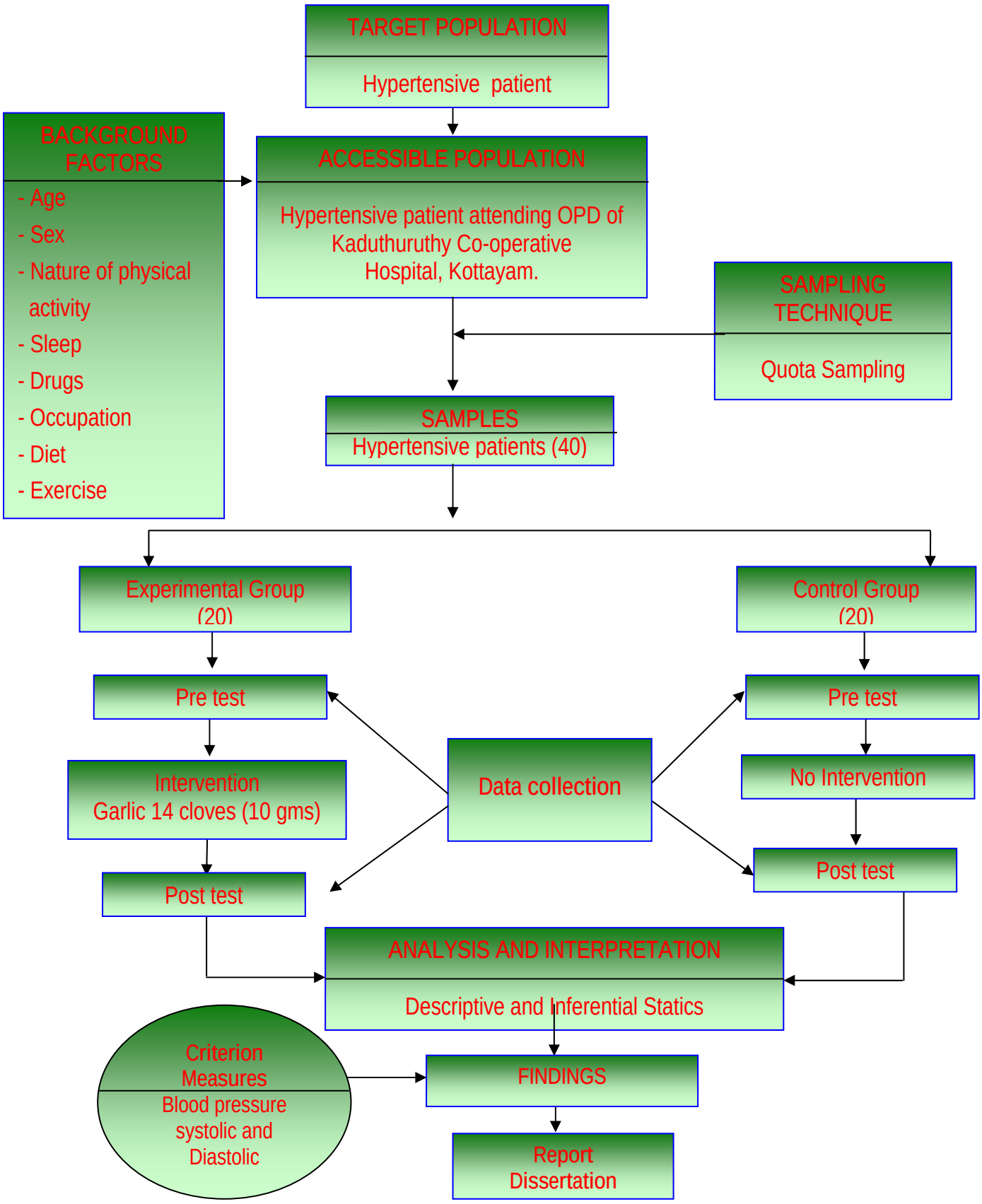

Fig.2 : SCHEMATIC REPRESENTATION OF RESEARCH DESIGN

SETTING OF THE STUDY

The selection of setting was done on the basis of feasibility of conducting the study, availability of sample, convenience to the investigator and co-operation from the authority. The Pre-test was conducted in OPD at Kaduthuruthy Co-operative Hospital, Kottayam.

VARIABLES

Variables included in the study were:

Dependent variables : Blood pressure (Systolic and diastolic)

Independent variables : Garlic administration.

Associate variables : Age, Sex, Occupation, Nature of physical activity Exercise, drugs and sleep.

POPULATION

The entire set of individuals (or objects) having some common characteristics.

Target Population; refers to entire population in which the researcher is interested and to which he / she would like to generalize the results of a study. The target population were clients with hypertension.

Accessible Population; Accessible population is the portion of target population that is available to the researcher. In this study the accessible population were patients with hypertension attending OPD at Kaduthuruthy Co-operative Hospital, Kottayam,

SAMPLIE AND SAMPLE SIZE

The sample size was 40 hypertensive patients who were attending OPD at Kaduthuruthy Co – operative Hospital, Kottayam.

SAMPLING TECHNIQUE

In this study quota sampling technique was used to select subjects by using sampling criteria.

SAMPLING CRITERIA

In sampling criteria the researcher specifies the characteristics for the population under the study by dealing the inclusion and exclusion criteria.

Inclusion Criteria, refers to hypertensive patients

- Who were diagnosed to suffer from essential hypertension.
- With regular pharmacological treatment.
- Attending OPD of kaduthuruthy Co-operative hospital during data collection.
- Who can speak in Malayalam.
- Who will be willing to take garlic.

Exclusion Criteria, refers to hypertensive patients who were

- Seriously ill patients.
- Patient with complication related hypertension.
- Patients who could not take garlic for 3 weeks.
- Patients with gastric problem.

INTERVENTION (Treatment)

A type of garlic (Allium sativum-dietary garlic) prepared and given to hypertensive patients were about 10 gms (14 cloves) once in day for 21 days. The garlic was measured and boiled with milk as per procedure (Appendix - VII).The garlic was measured given in separate packet for each day. The subject were monitored for their right way of preparation and administration by investigator.

DESCRIPTION OF THE TOOL

The investigator designed a tool to assess the Pre-test and Post-test blood pressure among hypertensive patient after garlic administration. An interview / observation schedule was developed and used in the study.

It consists of the following 2 sections

Section A: Background Data of Hypertensive Patients. It consisted of 14 items seeking information about age, sex, educational status, marital status, occupation, nature of work, type of family, diet duration of illness, hypertensive management ,sleep and exercise

Section B: Observation Schedule on Blood Pressure. Blood pressure was checked with sphygmomanometer and recorded in the grid provided.

VALIDITY

In the present study the structure tool was validated by 5 experts, including 3 nursing experts and 2 physician suggestions were considered and modification of tool was done according to the opinion of experts. The tool was first developed in English and then translated into Malayalam by Malayalam language experts language validity was established by re translating the tool to English.

VALIDITY OF THE INSTRUMENT

Validity of sphygmomanometer instrument was done by comparing the blood pressure measurements of 5 individuals with standard one used by the physician and found to be the same.

RELIABILITY OF THE TOOL

The reliability of the instrument was established by inter-rater reliability. The instrument was administered to 5 individuals simultaneously by 2 nursing personnel and the tool was found to be reliable for the study. The obtained reliability co- efficient r =0.80 was high.

PILOT STUDY

The pilot study was conducted in the OPD of Co-operative hospital, Kaduthuruthy, by taking prior permission from the authorities. 5 patients were selected as sample. Background factors were collected by interview method. Pre test, garlic intervention and post test was done feasibility of the study was established.

DATA COLLECTION PROCEDURE

The present study conducted in Kaduthuruthy, Co-operative hospital, after obtained permission from the authorities. The data was collected for a period of 4 weeks in the month of October 2009. The study samples were selected by quota sampling technique. 40 hypertensive patients were selected for study among those who satisfied the sample selection criteria.

20 were selected for experimental group and 20 were selected for control group. The objectives of the study was explained. Informed consent was obtained from both groups. Pre-test blood pressure was taken. Preparation of garlic was taught to the experimental group were instructed to take regular garlic consumption for 21 days.14 cloves of garlic (10 gms) was packed and given to patients. They were supervised at their houses for compliance. The control group did not have any intervention. After 21 days post test blood pressure was recorded in the houses of hypertensive patients around Kaduthuruthy co-operative hospital, Kottayam. The tool was edited for completion.

PLAN FOR DATA ANALYSIS

For the present study the researcher collected the data from the hypertensive patient and this data was analyzed by using both descriptive and inferential statistics.

1. Organize the data
2. Frequency and percentage distribution was used to describe the background variables.
3. Data on blood pressure among experimental group and control group were analyzed 't' test.
4. Linear regression test was used to test the association between selected factors and blood pressure after garlic administration.

ETHICAL CONSIDERATION

The study was conducted in the selected hospital after getting permission from the authorities of hospital. Each individual client was informed about the purpose of the study. Informed consent was obtained. The client had the freedom to leave the study with their own reason. No physical or psychological harm was caused.

CHAPTER – IV

DATA ANALYSIS AND INTERPRETATION

The analysis and interpretation of data is this study was based on data collected by interview was based on data collected by interview/observation schedule. The results were computed using descriptive and inferential statistics. The data were entered in to excel sheet and analyzed using SPSS version 10. A probability value of less than 0.05 was considered to be significant.

The objectives of the study

1. To compare blood pressure before and after garlic administration among hypertensive patients in experimental group.
2. To compare the mean difference in blood pressure among hypertensive patients in experimental group and control group.
3. To test the association between the mean difference in blood pressure in relation to selected factors among hypertensive patients in experimental.

The data collected were edited, tabulated analyzed, interpreted and the findings were presented in the form of tables and diagrams under the following sections.

Section 1	:	Data on background factors of hypertensive patients.
Section 2	:	Data on blood pressure before after garlic administration among hypertensive patients in experimental group.
Section 3	:	Data on mean difference in blood pressure among hypertensive patients in experimental group and control group.
Section 4	:	Data on association between mean difference in blood pressure and selected factors in experimental groups.

SECTION 1: DATA ON BACKGROUND FACTORS OF HYPERTENSIVE PATIENTS

TABLE – 1

Frequency, percentage and χ^2 distributions of background factors among experimental group and control group

Background Factors	*Experimental (n=20)*		*Control (n=20)*		*χ^2 Value*	*Signifi-cance*
	Freq.	*%*	*Freq.*	*%*		
Educational status						
a. Elementary	5	25	6	30	2.119	0.548 (NS)
b. High school	6	30	9	45		
c. Higher secondary	4	20	3	15		
d. Degree	5	25	2	10		
Marital status						
a. Single	1	5	-	-	1.030	0.597 (NS)
b. Married	16	80	17	85		
c. Divorce	-	-	-	-		
d. Widow/ Widowers	3	15	3	15		
Occupation						
a. Professional	2	10	5	25	2.986	0.56 (NS)
b. Skilled manual	1	5	-	-		
c. Skilled manual (low grade)	-	-	-	-		
d. Semiskilled	1	5	2	10		
e. Unskilled manual	-	-	-	-		
f. Referred	3	15	2	10		
g. Unemployed	13	65	11	55		

Background Factors	*Experimental (n=20)*		*Control (n=20)*		*χ^2 Value*	*Signifi-cance*
	Freq.	*%*	*Freq.*	*%*		
Nature of work						
a. Physically demanding	6	30	6	30		
b. Psychologically demanding	3	15	1	5	1.168	0.761 (NS)
c. Both physically and psychologically demands	6	30	7	35		
d. None of the above	5	25	6	30		
Dietary habits						
a. Vegetarian	-	-	-	-		
b. Non-Vegetarian	18	90	19	95	3.03	0.220 NS
c. Ova-Vegetarian	-	-	-	-		
d. Lacto-vegetarian	2	10	1	5		
e. Ova-lacto vegetarian	-	-	-	-		
Afternoon naps						
a. Yes	10	50	7	35	0.921	0.337 (NS)
b. No	10	50	13	65		
Exercise						
a. Yes	3	15	5	25	0.625	0.429 (NS)
b. No	17	85	15	75		

NS = Non Significant S = Significant

Table 1: Shows the frequency and percentage distribution of selected factors of hypertensive patients in experimental and control group.

Regarding educational status, majority of patients 6 (30%) had high school education and least 4 (20%) had higher secondary education in experimental group. In control group majority of patients 9 (45%) had higher education and least 2(10%) have degree education. The obtained χ^2 value $\chi^2 = 2.119$ (P=0.548) was not significant.

Regarding marital status, majority of patients 16 (80%) were married and least 1(5%) were single in experimental group. In control group majority of patients 17(85%) were married. The obtained χ^2 value, χ^2= 1.03 (P=0.599) was not significant.

Regarding occupation, majority of patients 13 (65%) were un employed and least were skilled manual 1(5%) and semi skilled manual 1(5%) in experimental group. In control group majority of patients 11(55%) were unemployed and none of them were doing skilled manual, skilled manual (Low grade) and unskilled. The obtained χ^2 value χ^2= 2.986 (P=0.56) was not significant.

Regarding nature of work, majority of people were physiologically demanding 6 (30%) and both physically and psychologically demanding 6(30%) and least 3 (15%) were doing psychologically demanding work in experimental group. In control group majority 7(35%) were doing both physically and psychologically demanding work and least 1(5%) were doing psychosocially demanding work. The obtained χ^2 value, χ^2= 1.168 (P=0.761) was not significant.

Regarding dietary habits, the majority of the patients 18 (90%) were non-vegetarian in experimental group. In control group majority of patient 19 (95%) were non-vegetarian. The obtained χ^2 value, χ^2 = 3.03 (P=0.220) was not significant.

Regarding afternoon naps, patients were equally distributed in experiment group. In control group, majority of patient 13 (65%) had no practice of afternoon naps. The obtained χ^2 value χ^2 =0.921 (P=0.337) was not significant.

Regarding exercise practice, majority of patient had no practice of exercise in both experimental and control group. The obtained χ^2 value χ^2= 0.625 (P=0.429) was not significant.

It was inferred that majority of hypertensive patients in experimental group had high school education, were married, were unemployed reported their work as both physically and psychologically demanding, belonging to nuclear family, had non-vegetarian dietary habits, afternoon naps equally distributed, were not practicing any type of exercise

It was inferred that majority of hypertensive patients in control group had high school education, were married, were unemployed reported their work as both physically and psychologically demanding, belonging to nuclear family ,had non-vegetarian dietary habits, were not practicing afternoon naps , were not practicing any type of exercise.

Figure 3. shows frequency and percentage distribution of hypertensive patients according to age.

That majority of patients 9(45%) were in age group of 51-65 yrs and least 4(20%) were in the age group36-50yrs in experimental group. In control group majority of hypertensive patient 8(40%) in the age group of > 65 yrs and least 5(25%) in the age group of 36-50 yrs. The obtained chi-square χ^2 = 0.536 (p=0.76) was not significant. It was inferred that experimental group and control group was comparable with regard to age.

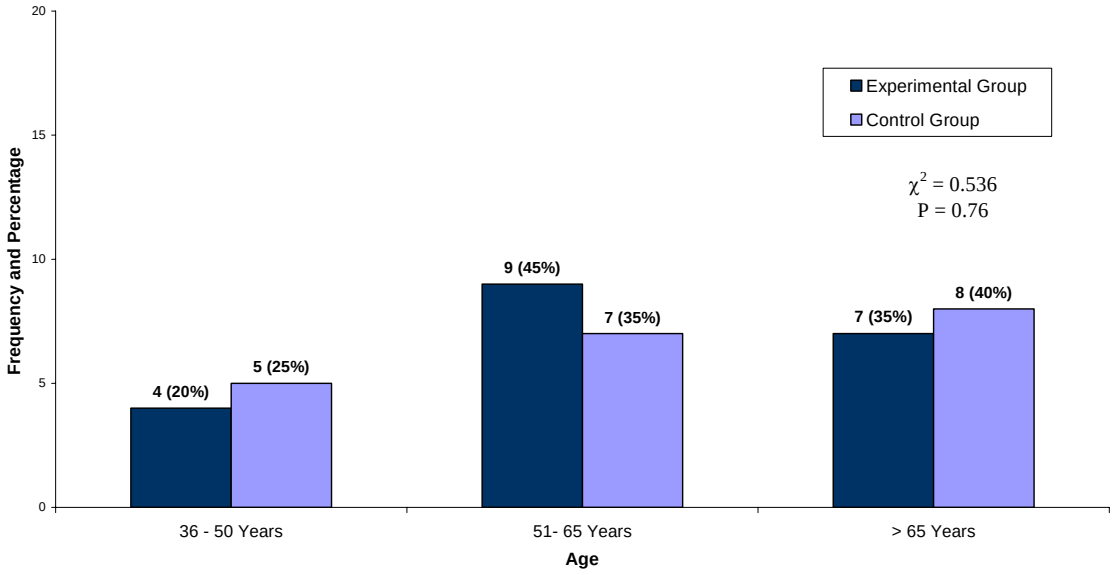

Fig. 3 : Frequency and percentage distribution of hypertensive patients according to age

Figure 4 shows frequency and percentage distribution of hypertensive patient according to sex.

That majority of patients 14 (70%) were female in experimental group and in control group male and female patients were equally distributed. The obtained chi-square χ^2 =1.67 (p= 0.197) was not significant. It was inferred that experimental group and control group was comparable with regard to sex.

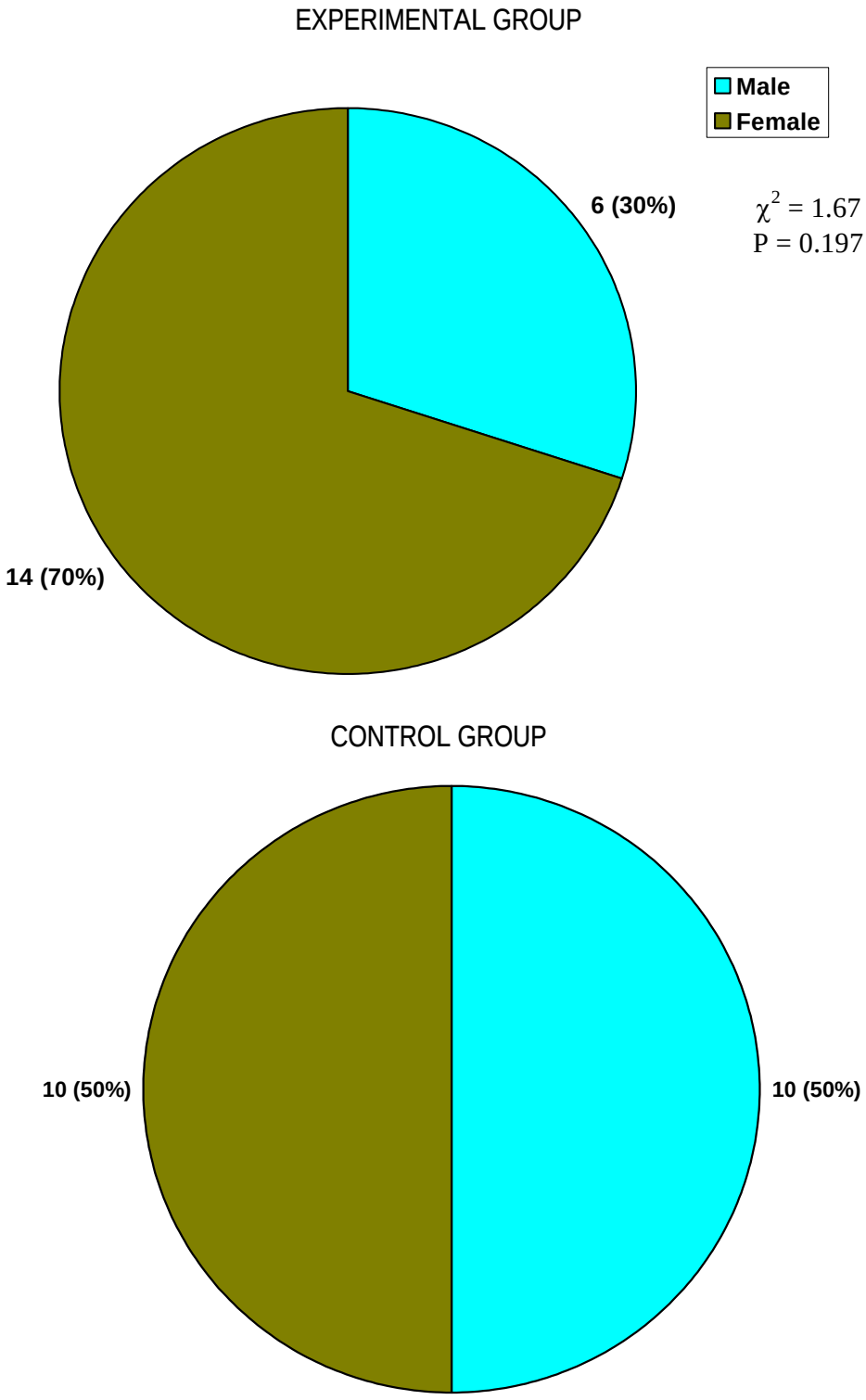

Fig. 4: Frequency and percentage distribution of hypertensive patients according to sex

Figures 5 shows frequency and percentage distribution of hypertensive patient according to family type.

Majority of hypertensive patients 19 (95%) were belonging to nuclear family in both experimental and control group. The obtained chi-square χ^2=.000(p=1.0) was not significant .It was inferred that experimental group and control group was comparable with regard to type of family.

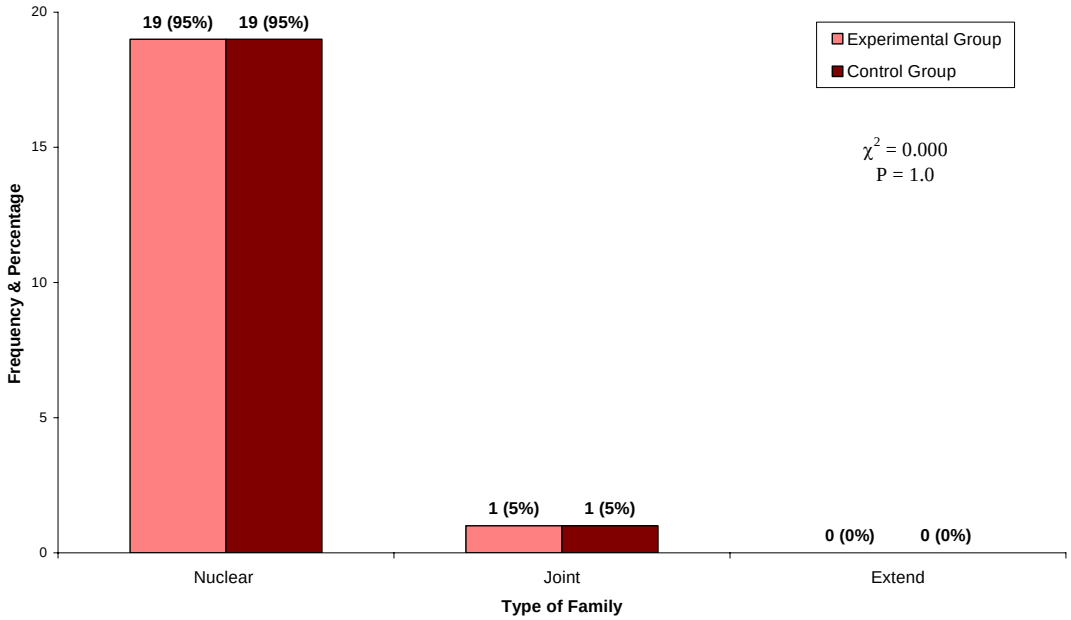

Fig. 5 : Frequency and percentage distribution of hypertensive patients according to type of family

Figure 6 shows frequency and percentage distribution of hypertensive patient according to years after diagnosis.

The majority of hypertensive patients 12(60%) had history of illness more than >5 yrs and least 1(5%) had history of illness between 2-5 yrs in experimental group. The majority of hypertensive patients 8(40%) had history of illness less than 2 yrs and least 5(25%) had history of illness between 2-5 yrs in control group. The obtained chi-square χ^2= 4.049(P=0.132) was not significant. It was inferred that both the groups were comparable with regard to years after diagnosis.

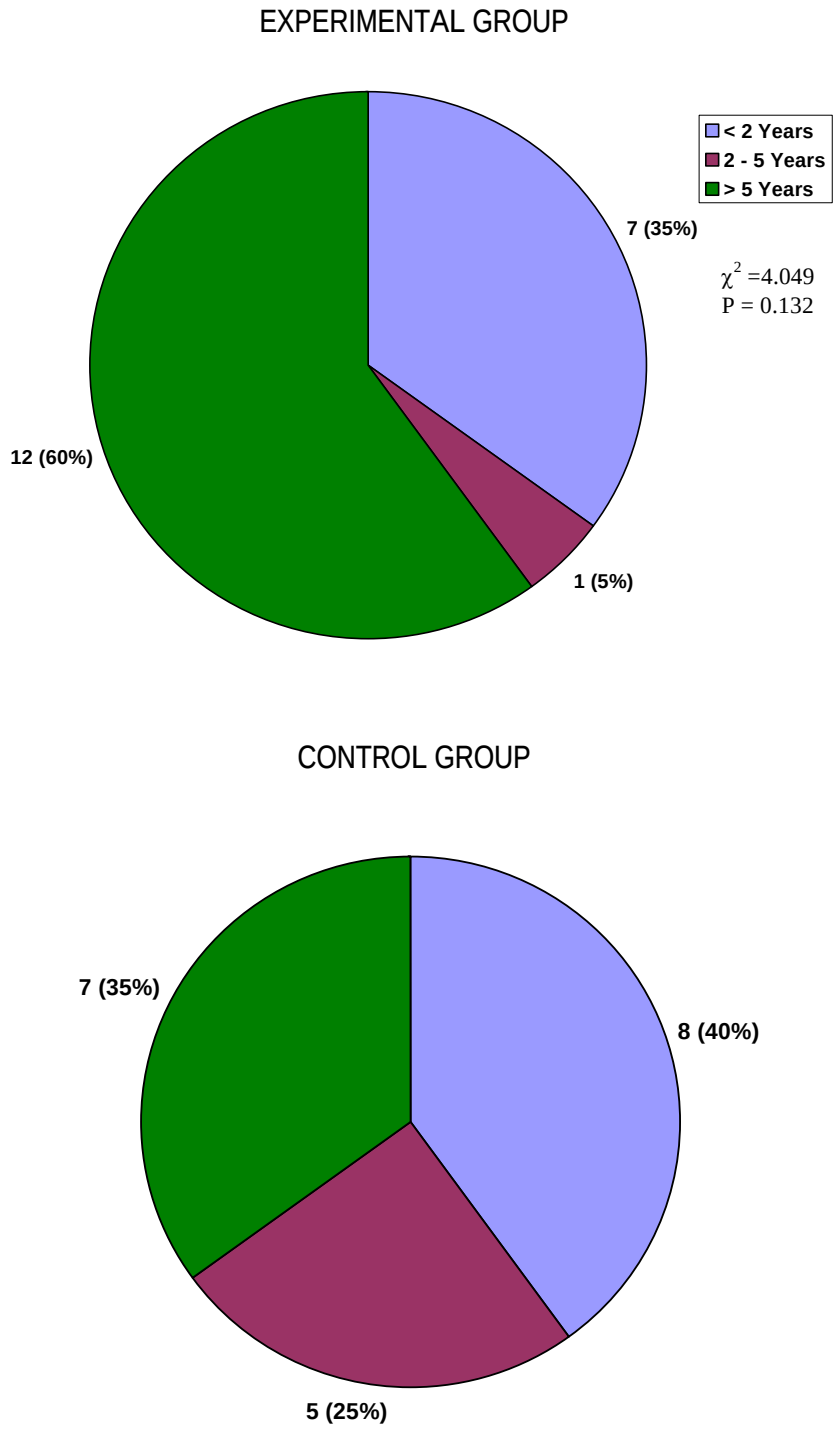

Fig. 6: Frequency and percentage distribution of hypertensive patients according to years after diagnosis

Figure 7 shows frequency and percentage distribution of hypertensive patient regarding regularity of drug taking.

Majority of hypertensive patients 17(85%) were taking medications very regularly and least 3(15%) were taking medications some what regularly in experimental group .In control group majority of hypertensive patients 13(65%) were very regular in taking medications and least 7(35%) were taking medications some what regularly. The obtained chi-square $\chi^{2=}$ 2.133(P=0.144) was not significant .It was inferred that both the groups were comparable with regard to taking drugs.

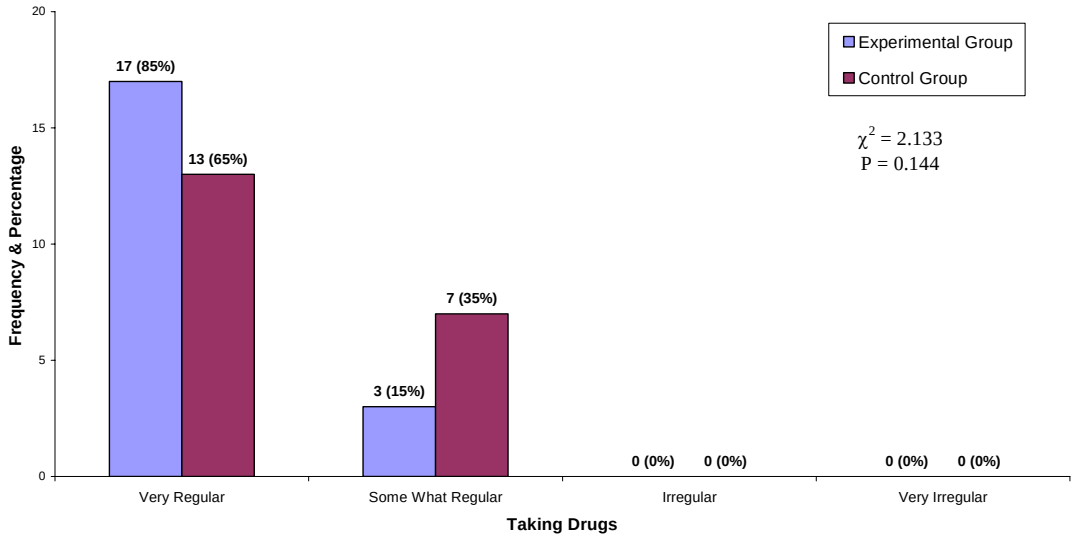

Fig.7: Frequency and percentage distribution of hypertensive patients according to regularity of drug taking

Figure 8 shows frequency and percentage distribution of hypertensive patient regarding sleeping hours.

Majority of hypertensive patients had both <8 hours of sleep 7(35%) and 8 hours of sleep 7(35%) were equally distributed and least 6(30%) had more than 8 hours of sleep in experimental group. In control group majority of hypertensive patients 11(55%) had sleeping hours less than 8 hours of sleep and least 4(20%) had 8 hours of sleep hours. The obtained chi-square $\chi^{2=}$ 1.798(P=0.407) was not significant .It was inferred that both the groups were comparable with regarding sleeping hours

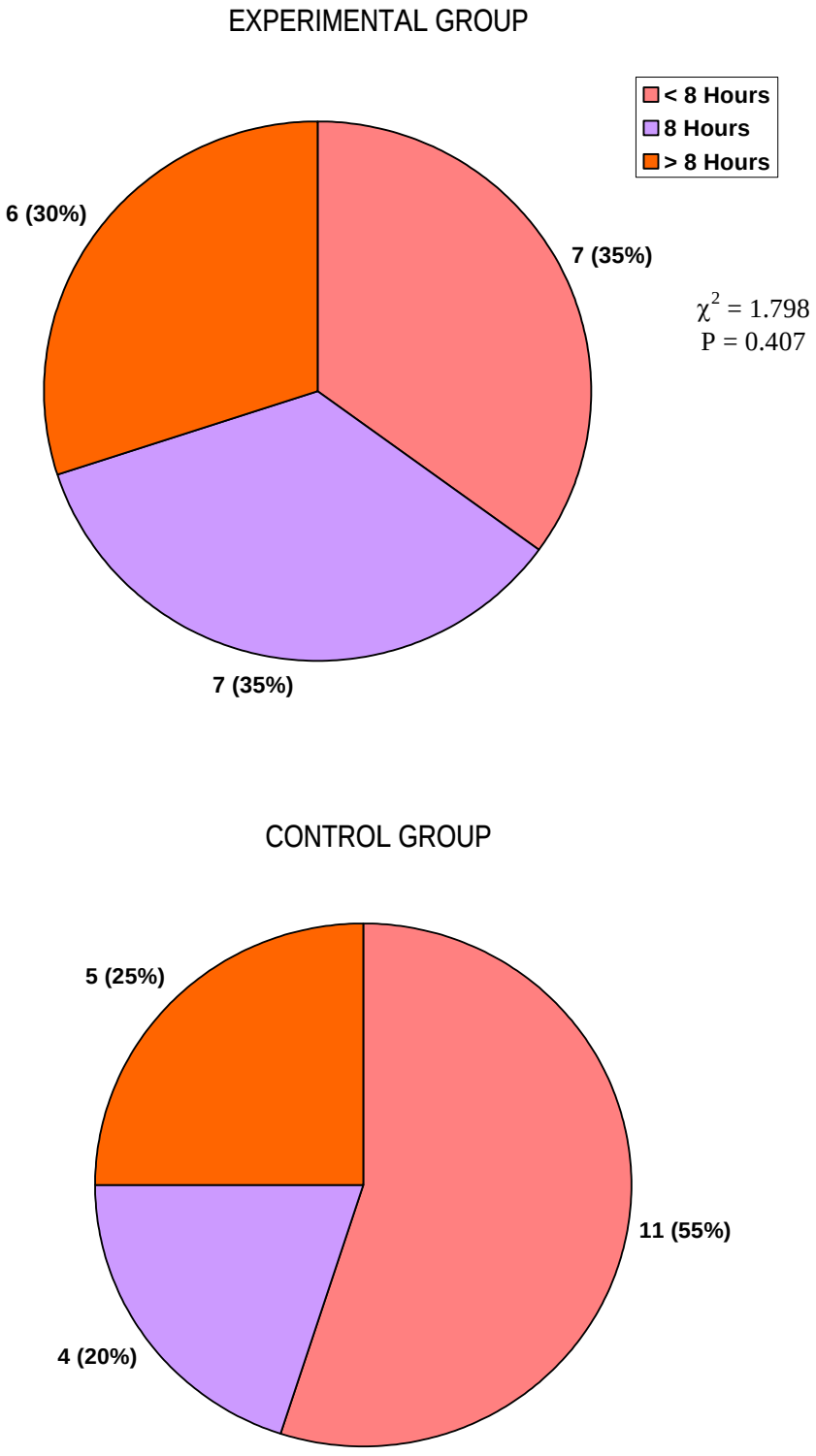

Fig. 8: Frequency and percentage distribution of hypertensive patients according to sleeping hours

SECTION II: DATA ON BLOOD PRESSURE BEFORE AND AFTER GARLIC ADMINISTRATION AMONG HYPERTENSIVE PATIENTS IN EXPERIMENTAL GROUP

For the purpose of this study the following null hypothesis were stated.

H_{01} : There will be no significant difference in systolic blood pressure before and after garlic administration among hypertensive patients in experimental group.

H_{02} : There will be no significant difference in diastolic blood pressure before and after garlic administration among hypertensive patients in experimental group.

TABLE – 2

Mean, range, SD, mean difference and 't' value regarding pre and post systolic blood pressure among hypertensive patients in experimental group

Test	*Systolic BP of experimental group (n=20)*				
	Mean	*Range*	*SD*	*Mean difference*	*'t' Value (P)*
Pre test	151.30	140-170	8.14	12.15	7.179 P=0.001 (S)
Post test	139.15	122-160	9.89		

Table-2 Shows the mean, range, standard deviation, mean difference and 't' value regarding the pre and post systolic blood pressure among hypertensive patients in experimental group.

The obtained post test mean systolic blood pressure 139.15 (SD=9.89) was less than the pre-test systolic blood pressure 151.30 (SD=8.14). The obtained mean difference was 12.15 and the obtained 't' value t=7.179 (P=0.001) was significant. Therefore the null hypothesis was rejected.

It was inferred that systolic blood pressure had significantly reduced after garlic administration among hypertensive patients in experiential group.

TABLE – 3

Mean, range, SD, mean, difference and 't' value regarding pre and post diastolic blood pressure among hypertensive patients in experimental group

Test	*Systolic BP of experimental group (n=20*				
	Mean	*Range*	*SD*	*Mean difference*	*'t' Value (P)*
Pre test	94.7	90-108	4.87	8.05	7.11 P=0.001 (S)
Post test	86.65	81-95	4.32		

Table -3 Shows the mean, range, standard deviation, mean difference and 't' value regarding the pre and post diastolic blood pressure among hypertensive patients in experimental group.

The obtained post test mean diastolic blood pressure 86.65 (SD=4.32) was less than the pre –test diastolic blood pressure 94.7 (SD=4.87). The obtained mean difference was 8.05 and the obtained 't' value t=7.11 (P= 0.001) was significant. Therefore null hypothesis was rejected.

It was inferred that diastolic blood pressure had significantly reduced after garlic administration among hypertensive patients in experimental group.

SECTION – III: DATA ON MEAN DIFFERENCE IN BLOOD PRESSURE AMONG HYPERTENSIVE PATIENTS IN EXPERIMENTAL GROUP AND CONTROL GROUP

For the purpose of this study the following null hypothesis were stated.

H_{03} : There will be no significant difference in the mean difference in systolic blood pressure among hypertensive patients in experimental group and control group.

H_{04} : There will be no significant difference in the mean difference in diastolic blood pressure among hypertensive patients in experimental group and control group.

TABLE – 4

Mean, SD, mean difference and 't' value regarding mean difference in systolic blood pressure among hypertensive patients in experimental group and control group.

Group	*Mean difference between the pre* and post Systolic *BP*				
	N	*Mean difference*	*SD*	*Difference in Mean difference*	*'t' Value (P)*
Experimental Group	20	12.08	7.65	7.42	2.982 P=0.005 (S)
Control Group	20	4.67	4.67		

S = Significant

Table- 4 shows the mean, standard deviation, mean difference and 't' value regarding mean difference in systolic blood pressure among hypertensive patients in experimental and control group.

The obtained mean value of the mean difference in systolic blood pressure 12.08 (SD=7.65) in experimental group was more than the mean value of the mean difference in systolic blood pressure 4.67 (SD=8.08) of control group. The obtained mean difference was 8.05 and 't' value t= 2.982 (P=0.005) was significant. Therefore the null hypothesis was rejected.

It was inferred that systolic blood pressure had significantly reduced after garlic administration in experimental group.

TABLE – 5

Mean, SD, mean difference and 't' value regarding mean difference in diastolic blood pressure among hypertensive patients in experimental group and control group.

Test	*Mean difference between pre test and post test diastolic BP*				
	N	*Mean difference*	*SD*	*Difference in Mean difference*	*'t' Value (P)*
Experimental Group	20	7.79	5.14	4.10	2.867 P=(0.007) (S)
Control Group	20	3.87	3.80		

S = Significant

Table- 5 Shows the mean, standard deviation, mean difference and 't' value regarding mean difference in diastolic among hypertensive patients in experimental and control group.

The obtained mean value of difference in diastolic blood pressure 7.97 (SD=5.14) in experimental group was more than the mean value of difference in diastolic blood pressure 3.87 (SD=3.80) of control group. The obtained mean difference was 4.10 and 't' value t= 2.867 (P=0.007) was significant. Therefore the null hypothesis was rejected.

Therefore it was inferred that post diastolic blood pressure had significantly reduced in experimental group after garlic administration in experimental group.

SECTION IV: DATA ON ASSOCIATION BETWEEN THE MEAN DIFFERENCE IN BLOOD PRESSURE AND SELECTED FACTORS IN EXPERIMENTAL GROUP

For the purpose of this study the following null hypothesis was stated.

H_{05} : There will be no significant association between the mean difference in systolic blood pressure and selected factors among hypertensive patients in experimental group.

H_{06} : There will be no significant association between the mean difference in diastolic blood pressure and selected factors among hypertensive patients in experimental group.

TABLE – 6

Linear regression regarding association between mean difference in systolic blood pressure and selected factors among hypertensive patients in experimental group

Background variables	*Standardized co-efficient (beta)*	*'t' value*	*Significance (P)*
Age	0.178	0.533	0.613 (NS)
Sex	-0.638	-2.699	0.036 (S)
occupation	0.236	0.643	0.544 (NS)
Nature of work	-0.412	-2.575	0.042 (S)
Type of family	0.213	0.913	0.396(NS)
Duration of illness	0.859	5.099	0.002(S)
Regularity of taking medications	-0.062	-0.345	0.742(NS)
Sleeping hours	0.268	1.520	0.179(NS)
Exercise	0.559	3.371	0.015(S)

(NS =Non Significant S= Significant)

Table- 6 Shows the mean, range, standard co-efficient and 't' value regarding systolic blood pressure and selected factors among hypertensive patients in experimental based on linear regression.

The obtained 't' value regarding selected factors such as sex, t=2.699 (p=0.036); nature of work t=2.575 (p=0.042); duration of illness t=5.099 (p=0.002); and exercise, t=3.371 (p=0.015) respectively were significant.

The obtained 't' value regarding selected factors such as age, t=0.533(p=0.613); occupation, t=0.643(p=0.544);type of family, t=0.913 (p=0.913) (p=0.396); regularity of taking medications, t=0.345 (p=0.742); and sleeping hours t=1.520 (p=0.179) respectively were not significant.

Therefore it was inferred that sex, nature of work, duration of illness and exercise also independently influenced the reduction in systolic blood pressure among hypertensive patients in experimental group in addition to garlic administration.

TABLE - 7

Linear regression regarding mean difference in diastolic blood pressure and selected factors among hypertensive patient in experimental group.

Background variables	*Standardized co-efficient (beta)*	*'t' value*	*Significance (P)*
Age	0.607	1.062	0.329 (NS)
Sex	0.500	1.237	0.262 (NS)
occupation	-1.843	-2.937	0.026(S)
Nature of work	-0.330	-1.207	0.273 (NS)
Type of family	-1.070	-2.679	0.037 (S)
Duration of illness	0.191	0.663	0.532 (NS)
Regularity of taking medications	0.346	1.133	0.301 (NS)
Sleeping hours	0.129	0.426	0.685 (NS)
exercise	0.472	1.663	0.147 (NS)

(NS =Non Significant S= Significant)

Table - 7 shows that standard coefficients and 't' value regarding diastolic blood pressure and selected factors among hypertensive patients in experimental group based on linear regression.

The obtained 't' value regarding selected factors such a occupation t= 2.936 (P=0026) and type of family, t=2.679(p=0.037) was significant. The obtained 't' value regarding selected factors such as age, t= 1.062 (P=0.329); sex, t=1.237 (P=0.262);nature of work, t= 1.207 (P=0.273); duration of illness, t=0.663 (p=0.532); regularity of taking medications, t= 1.133 (P=0.301); sleeping hours, t=0.426 (P=0.685); and exercise, t=1.163 (P=0.147) respectively were not significant.

Therefore it was inferred that occupation and type of family also independently influenced the reduction of diastolic blood pressure among hypertensive patients in experimental group in addition to garlic administration.

CHAPTER – V

SUMMARY, FINDINGS, DISCUSSION, IMPLICATIONS, LIMITATIONS, RECOMMENDATIONS AND CONCLUSION

This chapter is devoted to the summary, findings, limitations, interpretation of the result and recommendations that incorporate the implications of the study.

SUMMARY

The primary aim of the study was to assess blood pressure before and after garlic administration among hypertensive patients.

The objectives of the study were,

1. To compare blood pressure before and after garlic administration among hypertensive patients in experimental group.
2. To compare the mean difference in blood pressure among hypertensive patients among hypertensive patients in experimental group and control group.
3. To test the association between the mean difference in blood pressure in relation to selected factors among hypertensive patients in experimental group.

The study attempted to examine the following research hypothesis:

H_1 : There will be a significant difference in systolic blood pressure before and after garlic administration among hypertension patients in experimental group.

H_2 : There will be a significant difference in diastolic blood pressure before and after garlic administration among hypertensive patients in experimental group.

H_3 : There will be a significant difference in the mean difference in systolic blood pressure among hypertensive patients in experimental and control group.

H_4 : There will be a significant difference in the mean difference in diastolic blood pressure among hypertensive patients in experimental and control group.

H_5 : There will be a significant association between mean difference in systolic blood pressure and selected factors among hypertensive patients in experimental group.

H_6 : There will be a significant association between mean difference in diastolic blood pressure and selected factors among hypertensive patients in experimental group.

The review of literature on related studies helped the investigator to design the methodology, conceptual frame work and to develop the tool. The literature review was done for the present study and presented under the headings such as, studies related to hypertension and management, studies related to garlic and health, studies related to effect of garlic on hypertension.

The conceptual framework adopted for the present study was based on CIPP model. This model helped the investigator to assess the blood pressure before and after garlic administration.

The research approach adopted for the study was evaluative in nature. The research design selected for the present study was a quasi experimental design to be specific, repeated measures time series design to evaluate the effect of garlic on blood pressure among hypertensive patients.

The tool developed and used for data collection was a structured interview / observation schedule. The tool was reliable and feasible. The pilot study was conducted Kaduthuruthy co-operative Hospital, among and hypertensive patients, who fulfilled sample selection criteria. The study was found to be feasible.

The main study was conducted in the OPD of Kaduthurathy Co-operative Hospital, Kottayam, Kerala from month of October. 40 hypertensive patients (20 in experimental group and 20 in control group) were selected using quota sampling method among those who fulfilled the sample selection criteria. Prior permission from the authorities was sought and obtained, individual informed and consent was taken from the study samples after explaining the purpose of the study. Confidentiality was assured. Blood pressure was assessed before and after the garlic administration in experimental group. Pre and post test blood pressure was measured without any intervention in control group. The gap between pre and post test was 21 days. The gathered data were analyzed using SPSS (Version 10) package by using inferential and descriptive statistics.

CHARACTERISTICS OF STUDY SAMPLE

Majority of hypertensive patients in experimental group were in age group of 51-65 years 9(45%), were females14(70%), had high school education 6(30%), were married 16(80%), were unemployed 13(65%) reported their work as both physically and psychologically demanding 6(30%), belonged to nuclear family 19(95%), had non-vegetarian dietary habits 18 (90%), duration of illness more than five years 12(60%), took medications very regularly 17 (85%), equally had both less than 8 hours of sleep 7(35%) and 8 hours of sleep 7 (35%) equally had afternoon naps, had no exercise 17(85%).

Majority of hypertensive patients in control group were in age group of more than 65 years 8(40%), females10(50%) and males 10(50%) equally distributed, had high school

education 9(45%), were married 17(85%), were unemployed 11(55%) reported their work as both physically and psychologically demanding 7(35%), belonging to nuclear family 19(95%) ,had non - vegetarian dietary habits19(95%), duration of illness less than two years 8(40%), taking medications very regularly13(65%), had sleeping hours less than 8 hours11(55%), not practicing afternoon naps 13(65%), had no exercise 15(75%).

MAJOR FINDINGS

The major findings of the study were presented under following heading based on the objectives of the study.

Objective – 1: To compare blood pressure before and after garlic administration among hypertensive patients in experimental group.

- There was a significant reduction in the mean systolic blood pressure after garlic administration among hypertensive patients in experimental group t = 7.179 (P = 0.001).

- There was a significant reduction in the mean diastolic blood pressure after garlic administration among hypertensive patients in experimental group t = 7.11 (P = 0.001)

Objective – 2: To compare the mean difference in blood pressure among hypertensive patients in experimental and control group.

- The mean difference in systolic blood pressure among hypertensive patients in experimental group was significantly more than control group t = 2.982 (P = 0.005).
- The mean difference in diastolic blood pressure among hypertensive patients in experimental group was significantly more than control group t = 2.867 (P = 0.007).

Objective – 3: To test the association between the mean difference in blood pressure and selected factors among hypertensive patients in experimental group.

- There was significant association between sex, t=2.699(p=0.036); nature of work t=2.575(p=0.042); duration of illness t=5.099(p=0.002); exercise, t=3.371(p=0.015) and mean difference in systolic blood pressure among hypertensive patients.
- There was no significant association between age, t=0.533(p=0.613); occupation, t=0.643 (p=0.544); type of family, t=0.913 (p=0.396); regularity of taking medications, t=0.345 (p=0.742); sleeping hours t=1.520 (p=0.179) and mean difference in systolic blood pressure among hypertensive patients.
- There was significant association between occupation t= 2.936 (P=0026) and type of family, t=2.679(p=0.037) and mean difference in diastolic blood pressure among hypertensive patients.
- There was no significant association between age, t= 1.062 (P=0.329);sex, t=1.237 (P=0.262);nature of work, t= 1.207 (P=0.273);duration of illness, t=0.663 (p=0.532); regularity of taking medications, t= 1.133 (P=0.301);sleeping hours, t=0.426 (P=0.685); exercise, t=1.163 (P=0.147) and mean difference in diastolic blood pressure among hypertensive patients.

DISCUSSION

The result of the study were discussed according to the finding of the study.

Finding – 1: Findings on blood pressure before and after garlic administration in experimental group.

- There was a significant reduction in the mean systolic blood pressure after garlic administration among hypertensive patients in experimental group t = 7.179 (P = 0.001).

- There was a significant reduction in the mean diastolic blood pressure after garlic administration among hypertensive patients in experimental group t = 7.11 (P = 0.001)

The above finding was supported by the studies conducted by Karian.Ried.et.al.,(2007) showed a mean decrease of 4.6 ± 2.8mm Hg for SBP in the garlic group compared to placebo, Sobenin.A.et.al.,(2009), reported that time-released garlic powder tablets are more effective for the treatment of mild and moderate arterial hypertension than are regular garlic supplements, Qidwai.W.et.al.,(2000) demonstrated that individuals whose blood pressures on the lower side are more likely to consume more garlic in their diets with a significant mean difference in systolic blood pressure (p=0.05).

Finding – 2: Findings on mean difference in blood pressure among experimental group and control group.

- The mean value of mean difference in systolic blood pressure among hypertensive patient was significantly more than control group t = 2.982 (P = 0.005).
- The mean value of mean difference in diastolic blood pressure among hypertensive patient was significantly more than control group t = 2.867 (P = 0.007)

The above finding was supported by the studies conducted by Karian.Ried.et.al.,(2007) showed a mean decrease of 4.6 ± 2.8mm Hg for SBP in the garlic group compared to placebo, Sobenin.A.et.al.,(2009), reported that time-released garlic powder tablets are more effective for the treatment of mild and moderate arterial hypertension than are regular garlic supplements, Qidwai.W.et.al.,(2000) demonstrated that individuals whose blood pressures on the lower side are more likely to consume more garlic in their diets with a significant mean difference in systolic blood pressure (p=0.05).

Finding – 3: Findings on association between the mean difference in blood pressure and selected factors in experimental group.

- There was significant association between sex, t=2.699(p=0.036); nature of work t=2.575(p=0.042); duration of illness t=5.099(p=0.002); exercise, t=3.371(p=0.015) and mean difference in systolic blood pressure among hypertensive patients.

- There was no significant association between age, t=0.533 (p=0.613); occupation, t=0.643 (p=0.544); type of family, t=0.913 (p=0.396); regularity of taking medications, t=0.345(p=0.742); sleeping hours t=1.520 (p=0.179) and mean difference in systolic blood pressure among hypertensive patients.

- There was significant association between occupation t= 2.936 (P=0026) and type of family, t=2.679(p=0.037) and mean difference in diastolic blood pressure among hypertensive patients.

- There was no significant association between age, t= 1.062 (P=0.329); sex, t=1.237 (P=0.262); nature of work, t= 1.207 (P=0.273); duration of illness, t=0.663 (p=0.532); regularity of taking medications, t= 1.133 (P=0.301); sleeping hours, t=0.426 (P=0.685); exercise, t=1.163 (P=0.147) and mean difference in diastolic blood pressure among hypertensive patients.

IMPLICATION

The findings of the study have the following implications in nursing.

Implication for Nursing Practice

- Garlic is a cost effective measure to decrease the blood pressure.
- Including garlic in diet helps in reducing the need of increasing the close of drug.
- Garlic can be an adjunct therapy.

Implications in Nursing Education

- Nursing educators should encourage the nursing students to know about the measures which reduce blood pressure among hypertensive patients.

Implications in Nursing Research

- Study will be valuable reference and pathway for further researches.
- The finding of the study would help to expand the scientific body of professional knowledge up which further research can be conducted.
- Administration of garlic may be studied more significantly and used as specific nursing intervention.

LIMITATIONS

1. The sample were elected by non-random method.
2. The intervention was given only for 21 days.
3. The pharmacological management for blood pressure were beyond the control of investigator

RECOMMENDATIONS

- Randomized controlled trial can be done.
- A similar study can be conducted for a large group.

CONCLUSION

In addition to the pharmacological treatment nurse can teach the importance of including garlic in their diet for reduction of blood pressure among hypertensive patients. Also nature of work demand, duration of illness and exercise are associated with reduction in systolic blood pressure. Client must be encouraged to relax at the same time to do required exercises.

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SECONDARY SOURCES

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APPENDIX – I

LETTER REQUESTING OPINION AND SUGGESTIONS OF EXPERTS FOR ESTABLISHING CONTENT VALIDITY OF RESERCH TOOL.

From,

30083601
II year M. Sc (Nursing),
Annai J. K. K. Sampoorani Ammal college of Nursing,
Komarapalayam- 638183.
Namakkal dt

To,

Through
The Dean
Annai J.K.K.Sampoorani Ammal college of Nursing
Komarapalayam – 638183.
Namakkal (DT).

Respected Sir/Madam,

(Sub: Requisition for opinion and suggestion of experts for content validity).

I am, 30083601, II Year M.Sc (N) student of medical surgical Nursing specialty studying at Annai J.K.K.Sampoorani Ammal college of Nursing, Komarapalayam.

I have selected the following topic for research "An experimental study to assess the effectiveness of garlic on hypertension among hypertensive patient attending OPD kaduthuruthy Co-operative Hospital, Kaduthuruthy, Kottayam, Kerala" in partial fulfillment of the requirement for the award of the Degree of Master of Nursing under the Tamilnadu Dr.MGR Medical University, Chennai.

Here with I have enclosed the tool for its content validity and request you kindly examine the tool and give your valuable opinion and suggestions.

Thanking you

Date: Yours sincerely,

Place: Komarapalayam. (30083601)

APPENDIX – II

CONTENT VALIDITY CERTIFICATE

I hereby certify that I have validated the tool of 30083601, II Year M.Sc (N) student of medical and surgical Nursing speciality studying at Annai J.K.K.Sampoorani Ammal college of Nursing, Komarapalayam, who is undertaking the following study "An experimental study to assess the effectiveness of garlic on hypertension among hypertensive patient attending OPD in Kaduthuruthy Co-operative hospital, Kaduthuruthy, kottayam, district, Kerala".

Place: Signature of the Expert

Date: Designation

APPENDIX – III

LIST OF EXPERTS

1. Dr.K.P. RAMACHANDRAN,B.S.M.S
   Asst.Medical officer (siddha)
   Govt. Head quarters Hospital ,
   Erode-638009

2. Dr.J. PRIYA, M,D
   Physician
   Govt. Head Quarters Hospital
   Erode-638009

3. Mrs.JESSIE SUDARSANAM, M.Sc., (N),
   HOD – Medical Surgical Nursing
   Annai JKK Sampoorani Ammal College of Nursing
   Komarapalayam.

4. Ms.SHOBANA, M.Sc., (N),
   Assistant Professor – Medical Surgical Nursing,
   Annai JKK Sampoorani Ammal College of Nursing
   Komarapalayam.

5. Mrs.PANDIMADEVI, M.Sc., (N),
   Assistant Professor – Community Health Nursing,
   Annai JKK Sampoorani Ammal College of Nursing
   Komarapalayam.

APPENDIX – IV

LETTER SEEKING PERMISSION TO CONDUCT THE RESEARCH STUDY

From,
30083601
II year M. Sc (Nursing),
Annai J. K. K. Sampoorani Ammal college of Nursing,
Komarapalayam - 638183.
Namakkal dt

To,
The Kaduthuruthy
Co-operative hospital Ltd; no.k.379
Kaduthuruthy p.o, Kottayam-686604
Kerala, India

Through,
The Dean,
Annai J. K. K. Sampoorani Ammal college of Nursing,
Komarapalayam - 638183.

DEAN
Annai J.K.K.Sampoorani
Ammal College of Nursing
Komarapalayam - 638 183.

Sub: Seeking permission to conduct the research study.

Respected Sir,

I am 30083601 IIyear M. Sc. Nursing student of Annai J.K.K.Sampoorani Ammal college of Nursing, Komarapalayam, under the TamilNadu Dr. MGR Medical University, Chennai .

I would like to bring to your kind notice that as a partial fulfillment of M.Sc. Nursing programme, I am conducting "**An experimental study to assess the effectiveness garlic on hypertension among hypertensive patients attending OPD in Kaduthuruthy Co-operative Hospital, Kottayam.** I would like to conduct this research study in your esteemed Hospital. Hence I request you to kindly grant permission for the same.

Thanking you,

Date: 01-09-2009.
Place: Komarapalayam.

Yours faithfully,
30083601

Permission granted for undertaking the proposed experimental study in our hospital.

Dr. V. K. JOSE MBBS; DCH
Chief Medical Officer
The Kaduthuruthy Co-operative
Hospital Ltd. No. K-379
Kaduthuruthy Reg. No. 4445

APPENDIX – V

INTERVIEW/OBSERVATION SHEDULE ON BLOOD PRESSURE AMONG HYPERTENSIVE PATIENT

SECTION A: BACKGROUND VARIABLES

Code No _____

Instruction.

The following sections seek information about yourself and hypertension. There is no right or wrong response. So please tick (✓) the most appropriate response which suits you best. The information you share will be kept confidential.

1. Age (in years)
   a) 36-50 ❑
   b) 51-65 ❑
   c) > 65 ❑

2. Sex
   a) Male ❑
   b) Female ❑

3. Educational status
   a) Elementary ❑
   b) High school ❑
   c) Higher secondary ❑
   d) Degree ❑

4. Marital status
   a) Single ❑
   b) Married ❑
   c) Divorce ❑
   d) Widow / Widower ❑

5. Occupation

a) Professional workers(eg; lawyer, doctor, manager) ❑

b) Skilled manual(eg; master builder, carpenter, ❑
Shop assistant, nurse, farmer)

c) Skilled manual(low grade eg; electrician, plumper)。 ❑

d) Semiskilled manual (eg, bus driver ,fitter) ❑

e) Unskilled manual(eg; general labourer, bar man, porter)。 ❑

f) Retired ❑

g) Unemployed ❑

6. Nature of work

a) Physically demanding ❑

b) Psychologically demanding ❑

c) Both physically and psychologically demanding ❑

d) None of the above ❑

7. Type of family

a) Nuclear ❑

b) Joint ❑

c) Extend ❑

8. Dietary habits

a) Vegetarian ❑

b) Non vegetarian ❑

c) Ova vegetarian ❑

d) Lacto-vegetarian ❑

e) Ova –lacto vegetarian ❑

9. Duration of illness (hypertension)

a) < 2 year ❑

b) 2-5 yrs ❑

c) >5yrs ❑

10. Specify the drug and dosage taken?

a) _____, _____ mg ❑

b) _____, _____ mg ❑

11. How regular are you is taking hypertensives drug?

a) Very Regular ❑

b) Some what regular ❑

c) Irregular ❑

d) Very irregular ❑

12. State the average hours of sleeping per day?

a) <8 hours ❑

b) 8 hours ❑

c) >8 hours ❑

13. Do you take a nap in the afternoon?

a) Yes ❑

b) No ❑

14. Are you practicing any exercise regularly?

a) Yes ❑

b) No ❑

c) If yes. Specify _____ ❑

SECTION B - OBSERVATION SCHEDULE ON BLOOD PRESSURE

Observation	01(0 Day)	O2(Day 7)	O3(Day 14)	O4 (Day 21)
Time of drug taken before recording blood pressure				
Systolic pressure				
Diastolic pressure				
Pulse pressure				

APPENDIX – VI

രോഗിയുടെ അതിരക്തസമ്മർദ്ദത്തെക്കുറിച്ച് അറിയാനുള്ള ചോദ്യാവലി

വിഭാഗം – എ അടിസ്ഥാന വിവരങ്ങൾ കോഡ് നമ്പർ

നിർദ്ദേശം – ചോദ്യകർത്താവ് രോഗിയോട് ഓരോ ചോദ്യങ്ങളായി ചോദിക്കുകയും ശരിയായ ഉത്തരത്തിന് നേരേ അടയാളപ്പെടുത്തുകയും ചെയ്യുന്നു.

1) വയസ്സ്

a) 36–50 വയസ്സ് ☐

b) 51–65 വയസ്സ് ☐

c) 65 വയസ്സിൽ കൂടുതൽ ☐

2) ലിംഗം

a) പുരുഷൻ ☐

b) സ്ത്രീ ☐

3) വിദ്യാഭ്യാസം

a) പ്രൈമറി ☐

b) ഹൈസ്കൂൾ ☐

c) +2/പ്രീഡിഗ്രി ☐

d) ബിരുദവും അതിനു മുകളിലും ☐

4) വിവാഹ നില

a) അവിവാഹിതർ ☐

b) വിവാഹിതർ ☐

c) ബന്ധം വേർപ്പെടുത്തിയവർ ☐

d) വിധവ/വിഭാര്യൻ ☐

5) തൊഴിൽ രീതികൾ

a) പ്രോഫഷണൽ (ഡോക്ടർ,എഞ്ചിനീയർ, വക്കീൽ, അദ്ധ്യാപകൻ) ☐

b) വിദഗ്ദജോലി (ഉദാ:– മരാശാരി,നേഴ്സ്,കൃഷിപ്പണി) ☐

c) വിദഗ്ദ ജോലി (താഴ്ന്നതരം ഉദാ: പ്ലംബിർ, ഇലക്ട്രീഷൻ) ☐

d)പൂർണ്ണ വൈവിദ്ധ്യം ആവശ്യമില്ലാത്ത ജോലി (ഡ്രൈവർ ഫിറ്റർ) ☐

e) അവിവിദഗ്ദജോലി (ക്ലീനർ, ബാർമാൻ) ☐

f) ഉദ്യോഗത്തിൽ നിന്നും വിരമിച്ചവർ ☐

g) തൊഴിൽ രഹിതർ ☐

6) ജോലിയുടെ സ്വഭാവം

a) ശാരീരിക അദ്ധ്വാനം വേണ്ടത് ☐

b) മാനസിക അദ്ധ്വാനം വേണ്ടത് ☐

c) ശാരീരികവും മാനസികവുമായ അദ്ധ്വാനം വേണ്ടത് ☐

d) മുകളിൽ പെടാത്തവ ☐

7) കുടുംബത്തിന്റെ സ്വഭാവം

a) അണുകുടുംബം ☐

b) കൂട്ടുകുടുംബം ☐

c) വിസ്തൃത കുടുംബം ☐

8) ഭക്ഷണ ആഭിമുഖ്യരീതി വ്യക്തമാക്കുക

a) തനി സസ്യഭുക്ക് ☐

b) മാസഭുക്ക് ☐

c) മുട്ട സസ്യഭുക്ക് ☐

d)പാൽ സസ്യഭുക്ക് ☐

e) മുട്ട- പാൽ സസ്യഭുക്ക് ☐

9) അതി രക്ത സമ്മർദ്ദം കണ്ടുപിടിച്ചിട്ട് എത്ര നാളായി

a) രണ്ടു വർഷത്തിൽ കുറവ് ☐

b) 2-5 വർഷം ☐

c) 5 വർഷത്തിൽ കൂടുതൽ ☐

10) താങ്കൾ കഴിക്കുന്ന മരുന്നിന്റെ പേരും അളവും എത്ര

a) ....., ... മില്ലിഗ്രാം ☐

b) ....., ... മില്ലിഗ്രാം ☐

11) മരുന്നു കഴിക്കുന്ന പതിവ്

a) വളകരെ കൃത്യമായി ☐

b) ഭാഗീകമായി കൃത്യമായി ☐

c) കൃത്യതയില്ലാതെ ☐

d) ഒട്ടും കൃത്യതയില്ലാതെ ☐

12) ഒരു ദിവസത്തിൽ ഉറങ്ങുന്ന മണിക്കൂരുകളുടെ എണ്ണം

a) 8 മണിക്കുറിൽ കുറവ് ☐

b) 8 മണിക്കൂർ ☐

c) 8 മണിക്കൂറിൽ കൂടുതൽ ☐

13) ഉച്ച ഉറക്കം എടുക്കാറുണ്ടോ

a) ഉണ്ട് ☐

b) ഇല്ല ☐

14) താങ്കൾ കൃത്യമായി ഏതെങ്കിലും വ്യായാമം പരിശീലിക്കുന്നുണ്ടോ ?

a) ഉണ്ട് ☐

b) ഇല്ല ☐

വിഭാഗം ബി

രക്തസമ്മർദ്ദത്തെക്കുറിച്ചുള്ള നിരീക്ഷണ പട്ടിക

നിരീക്ഷണം	O_1	O_2	O_3	O_4
പ്രഷർ അളക്കുന്നതിന് മുൻപ് മരുന്ന് കഴിച്ച സമയം				
സിസ്റ്റോളിക് പ്രഷർ				
ഡയസ്റ്റോളിക് പ്രഷർ				
സിസ്റ്റോളിക്കും ഡയസ്റ്റോളിക് പ്രഷറും തമ്മിലുള്ള വ്യത്യാസം (പൾസ് പ്രഷർ)				

APPENDIX – VII

PROCEDURE OF GARLIC ADMINISTRATION

PREPARATORY PHASE

1) Explain the procedure to the patient
2) Informed consent to be obtained
3) Blood pressure to be checked prior to the intervention(both experimental and control group)

PREPARATION OF GARLIC

Steps;

1)

- Boil 100ml of milk
- Remove milk cream(skimmed milk)
- crush 10gm of garlic
- Again boil skimmed milk with garlic

2) Administer garlic every morning before food for 21 days (experimental group)

3) At the end of intervention post blood pressure will be checked in both control and experimental group

ABSTRACT

A quasi experimental study to assess the effectiveness of garlic on blood pressure among hypertensive patients in Kaduthuruthy Co-operative Hospital, Kottayam District in selected was undertaken by 30083601 as a partial fulfillment of the requirement for the Degree of Master of Science in nursing at Annai JKK Sampoorani Ammal College of nursing ,under the Tamil Nadu Dr.MGR Medical University during the year 2008-2010.

The objectives of the study were, to compare blood pressure before and after garlic administration among hypertensive patients in experimental group, to compare the mean difference in blood pressure among hypertensive patients in experimental and control group, to test the association between the mean difference in blood pressure in relation to selected factors of hypertensive patients in experimental group.

The research hypotheses formulated were; H_1—There will be a significant difference in systolic blood pressure before and after garlic and administration among hypertensive patients in experimental group,H_2—There will be a significant difference in diastolic blood pressure before and after garlic administration among hypertensive patients in experimental group,H_3—There will be a significant difference in mean difference in systolic blood pressure among hypertensive patients in experimental and control group,H_4-There will be a significant difference in mean difference in diastolic blood pressure among hypertensive patients in experimental and control group, H_5---There will be a significant association between mean difference in systolic blood pressure in relation to selected factors among hypertensive patients in experimental group,H_6—There will be a significant association between mean difference in diastolic blood pressure in relation to selected factors among hypertensive patients in experimental group.

The investigator organized the review of literature under three section as follows, studies related to hypertension and management, studies related effect of garlic on health, studies related effect of garlic on hypertension.

The conceptual framework for this study was based on CIPP model. The research design used was quasi experimental design to be specific repeated measures time series design. The samples for the study were chosen by quota sampling technique. 20 in experimental group and 20 in control group. Background factors of each sample was collected by interview technique from the hypertensive patients attending OPD at Kaduthuruthy co-operative Hospital, Kottayam. Preparation of garlic was explained to experimental group. Pre test, Post test blood pressure were measured in experimental and control group. Garlic was administrated to experimental group. Data obtained were edited, organized, analyzed by using SPSS (version 10) and interpreted by descriptive and inferential statistics.

The findings of the study shows that there was a significant ($p<0.05$) reduction in both systolic and diastolic pressure after garlic administration among hypertensive patients in experimental group. Selected background factors such as sex, nature of work, duration of illness and exercise also had significant association in mean difference in systolic blood pressure.

The conclusion of the study was that increased intake of garlic was an effective technique for reducing blood pressure among hypertensive patients. Reducing demands in job and doing the required exercise are equally important to reducing hypertension. Implication, limitation and recommendation based on the findings were clearly spelt.